

FORCES

KINEMATICS- The study of _____ things move.

DYNAMICS- The study of _____ things move.

FORCE- A _____ or _____ on an object. A force is a _____ quantity. Forces acting to the right are positive, to the left, negative.

NEWTON'S FIRST LAW OF MOTION

Every object continues in a state of _____ or of _____ in a straight line unless acted upon by an external unbalanced force.

This tells us that every object _____ in its speed or direction of motion. This property of _____ is called _____. Newton's first law is often referred to as the _____.

NEWTONS SECOND LAW OF MOTION

An object that is acted on by an _____ experiences an _____ in the direction of the force. The acceleration varies _____ with the force and _____ with the mass. It is summarized as:

$$F = ma$$

Where F = force (N)

m = mass (kg)

a = acceleration (m/s^2)

units: $F = \text{kg} \times \frac{\text{m}}{\text{s}^2}$

$$N = \frac{\text{kgm}}{\text{s}^2}$$

NEWTON'S THIRD LAW OF MOTION

If object A exerts a _____ on object B, then object B exerts a _____ equal in magnitude but _____ on object A.

$$F_{A \text{ on } B} = -F_{B \text{ on } A}$$

This clearly demonstrates that

1. forces always occur in _____
2. each force of the pair acts on _____
3. each force of the pair is _____ in magnitude but acts in the _____ to each other

A shortened version of the third law is:

For every action there is an _____ and _____ reaction.

Homework

p.159 # 1,2,3 section review
p.161 # 1 conceptual problem
p.163 # 1,2,3 practice problems
p.179 # 1,2 (not numbered)

You will find it helpful to read parts of p.154 to p.179 to find some of these answers.

